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AMPHIBIANS AND REPTILES OF THE UPPER LITTLE WABASH RIVER BASIN, ILLINOIS, PART 2. FINAL REPORT FOR 2008 - SURVEYS OF WETLANDS ADJACENT TO THE UPPER LITTLE WABASH RIVER AND ITS MAIN TRIBUTARIES

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ILLINOIS NATURAL HISTORY SURVEY

ABSTRACT

A Herpetological survey of the Little Wabash River basin, Illinois, was conducted to determine the status and distribution of the group. During 2006 -2008, amphibians and reptiles were surveyed at eight wetland sites, using Visual Encounter Surveys, aquatic hoop traps, and minnow traps. A total of 12 species was found. The most abundant species found was *Acris crepitans,* which was found at all eight sites. No species new to the basin were encountered. The amphibian and reptile assemblage of the Little Wabash River basin is similar to those for other basins at similar latitudes within Illinois.

INTRODUCTION

River drainages traditionally have not been the unit of choice for herpetological surveys, even though there are compelling reasons to do so. The vast majority of species are either aquatic or semi-aquatic, and many of the terrestrial species are attracted to the vicinity of aquatic systems, either for moisture or resources (prey). In addition, riparian areas are often used by amphibians and reptiles as dispersal corridors, especially if the riparian areas are forested (Burbrink et al., 1994). This serves to tie a drainage basin together into a cohesive unit with a common herpetofauna. A herpetofaunal survey of in-stream sites along the Little Wabash River drainage was conducted in 2007 (Phillips 2008). This report gives the results of a herpetofaunal survey of wetland sites in the drainage. It is hoped that the present survey will serve as a baseline to which future efforts can be compared. Repeated surveys or monitoring allows natural resource agencies to document long-term trends of, and assess the effects of land use practices or anthropogenic disturbances on, the flora and fauna.

Although amphibians and reptiles are not each other's closest relatives, they have traditionally been studied together under the discipline of Herpetology because they share many habits and are outwardly similar. Field surveys for amphibians and reptiles are usually conducted in a single effort because of these similarities. They are both secretive in their habits and being ectothermic, they are generally active under a narrower temperature range than birds and mammals. However, there are also a number of differences between amphibians and reptiles that make combined surveys very difficult. Amphibians are restricted to moist conditions because they exchange gasses through their skin and lay eggs in water or other moist situations (rotting logs, etc.). Most amphibians have an aquatic larval stage that may last several months to a year. Reptiles, on the other hand, are less restricted by available moisture and may go weeks without

direct contact with water. All these factors combine to make amphibians and reptiles one of the most difficult vertebrate groups to survey, especially in a single effort.

DESCRIPTION OF STUDY AREA

The Little Wabash River in southeastern Illinois flows 382 km from Coles County south through Cumberland, Shelby, Effingham, Clay, Richland, Wayne, Edwards, and White counties to its confluence with the Wabash River near New Haven, Illinois (Figure 1). It is the second largest tributary of the Wabash River and has a drainage area of approximately 5,125 km^2 (Ogata, 1975). The river originates in the area of the Shelbyville Moraine, continues on a relatively flat plain until it reaches Clay County where the topography of the basin becomes hilly and rolling, then flattens out again when it reaches the Wabash River floodplain near Carmi, Illinois. The Little Wabash River is a postglacial stream with its meandering length nearly twice as long as the basin (Page et al., 1992). The river averages 11.5 m in width and is a slow-moving, continuous flow stream with predominately silt/sand substrates, many pools, and few riffles. The average slope of the Little Wabash River is about 61 cm/km with nearly half the available fall occurring in its upper 65 km (Barker et al., 1967). The basin is subjected to oil, municipal, industrial, and agricultural pollution (Smith, 1971). Major tributaries include Skillet Fork, Elm River, Fox River, and Big Muddy Creek, and are low-gradient, brushy streams (Smith, 1971). This study focused on wetlands (ephemeral ponds, seeps, flooded ditches, meander scars, oxbow lakes) in the upper portion of the drainage, from its source to the border between Wayne and Edwards counties.

METHODS

During 2006 to 2008, amphibians and reptiles were surveyed at eight wetland sites adjacent to the Little Wabash River and its main tributaries using Visual Encounter Surveys (VES), aquatic hoop traps, and minnow traps. Visual encounter was the main method used. Visual encounter surveys involve searching appropriate habitat (mainly turning cover items such as logs, rocks, and miscellaneous debris and also visually scanning open habitats) and recording all species encountered. A thorough explanation of this technique can be found in Heyer, et al (1994). The effort expended in visual encounter surveys is recorded as man-hours. Aquatic trapping (hoop traps, minnow traps, etc.), baited or unbaited, are placed in the water and checked at regular intervals. Incidental encounters also accounted for some amphibian and reptile observations. VES and aquatic hoop traps were chosen for this survey because effort is easily quantified and the methods involved are repeatable with the least amount of bias.

Geographic coordinates of survey sites were taken with a Garmin GPS unit or were taken from www.acme.mapper.com. Voucher specimens of selected species were collected, cataloged, and deposited in the Illinois Natural History Survey (INHS) Amphibian and Reptile Collection. Catalogue numbers are given in Table 3.

RESULTS / DISCUSSION

A total of 12 species was collected from 8 sites along the Upper Little Wabash River and its main tributaries from 2006 to 2008 (Table 1; Appendix I). Search effort and trap-nights are given by site in Table 2. The most abundant species encountered was the Cricket Frog, *Acris crepitans*. The number of species encountered per site ranged from 1 to 6 (Table 1). The most notable species encountered was the Copperbelly Watersnake, *Nerodia erythrogaster neglecta*. No species new to the basin were encountered. The total number of species known from the Upper Little Wabash River basin is 46 (Phillips, 2008). This is similar to the species richness of other rivers in Illinois at the same latitude such as the Embarras River.

SITE DESCRIPTIONS

Site 50. Two small seeps along the east bank of the Little Wabash River. Threats include erosion from adjacent farm fields.

Site 51. High quality upland forest, with deep ravines flowing south into a wide, sandy floodplain of a tributary to East Branch Green Creek; several small, ephemeral wetlands near sewage lagoons associated with the rest area. Threats include leakage from sewage lagoons into surrounding ephemeral pools; dumping of concrete debris near sewage lagoons.

Site 52. A series of oxbow lakes and meander scars on the west floodplain of the Little Wabash River. One of the oxbows has been drained and is farmed. The oxbow closest to Iola Rd is separated from row-crops by a small ridge. This wetland has abundant aquatic vegetation including a well-developed ring of buttonbush (*Cephalanthus occidentalis*). Due south of this wetland is a series of forested, ephemeral wetlands. Threats include ORV use and encroachment of row-crops.

Site 53. A small, ephemeral wetland in a roadside ditch on the north floodplain of Dismal Creek. Aquatic vegetation not well-developed; grasses predominate. Threats include de-icing chemicals.

Site 54. Small, degraded flatwoods with high water table and small ephemeral wetland. Threats include dumping of trash.

Site 55. Flag Pond. A large wetland in the floodplain of Little Muddy Creek. Owned by IDNR.

Site 56. An oxbow lake and a seasonally flooded meander scar in the floodplain of the Little Wabash River, both with well developed aquatic vegetation and surrounded by a large tract of high quality forest. The meander scar drains into Little Muddy Creek and the oxbow lake is associated with the Little Wabash River.

Site 57. A small, forested, ephemeral wetland along a drainage ditch that enters the Big Muddy Creek, immediately above its confluence with the Little Wabash River. Threats include contamination from nearby oil wells.

MANAGEMENT RECOMMENDATIONS

The sites visited during this study were generally in fair to good condition, as evidenced by an overall healthy appearance of the water (clear, no obvious pollution – e.g. oil slicks, little eutrophication – e.g. no serious algal blooms) and abundant aquatic vegetation. However, several of the survey sites were immediately adjacent to row-crops. The primary management recommendation is to retain buffer strips of natural vegetation of at least 100m along the riparian zone and attempt to re-connect the oxbows to the mainstem through expansion of the riparian zone.

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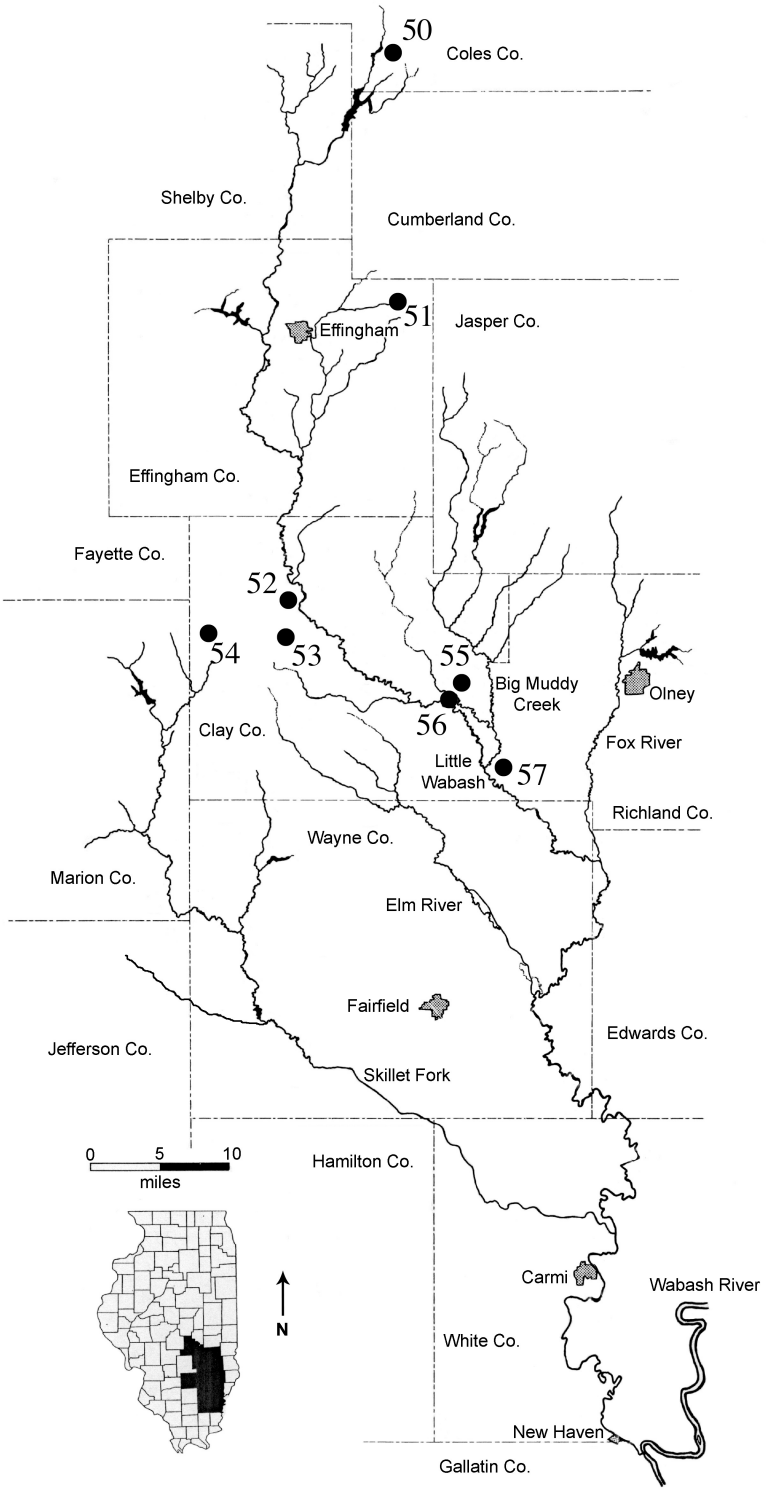

Figure 1. Map of the Little Wabash River Basin, Illinois showing locations for the 2006 – 2008 herpetological survey.

Table 1. Amphibians and reptiles encountered by site during the 2006 - 2008 Little Wabash River Basin survey. Data includes number of live individuals encountered. Site locations are given in Appendix I.

Scientific name	50	51	52	53	Site 54	55	56	57
Amphibians								
Ambystoma texanum		25			50*			
Acris crepitans	20+	20+	50+	50+	20+	50+	20+	20+
Bufo americanus	1	5						
Bufo fowleri						1		
Pseudacris triseriata					20+	50+		
Rana catesbeiana								1
Rana sphenocephala		5	50+		8	50+	6	
Reptiles								
Chelydra serpentina								1
Chrysemys picta				1		1		
Eumeces fasciatus		1						
Nerodia erythrogaster						1		
Nerodia sipedon		1						
Total number species	2	6	2	2	4	6	2	3

* eggs collected and raised in lab

Table 2. Search effort for the 2006 – 2008 Upper Little Wabash River Basin herpetological surveys. VES is recorded in man-hrs and aquatic trapping in trap-nights. Site locations are given in Appendix I.

Search Method	50	51	52	53	Site 54	55	56	57
VES	2.5	3.8	2.6	1.25	0.75	6	3	1.5
Aquatic Traps	0	0	10	0	0	0	0	4

Table 3. INHS catalogue numbers by date and site for specimens vouchered during the 2006 – 2008 Upper Little Wabash River Basin herpetological surveys.

Species	INHS Catalogue No.	Date Collected	Site Number
Acris crepitans	20573	10 May 2007	51
Acris crepitans	20962	14 Aug 2008	55
Bufo americanus	20269	6 July 2006	50
Bufo fowleri	20951	14 Aug 2008	55
Pseudacris triseriata	20954	14 Aug 2008	55
Rana sphenocephala	20950	14 Aug 2008	55
Rana sphenocephala	21151	18 Sept 2008	52
Eumeces fasciatus	20963	14 Aug 2008	55

Appendix I. Collection sites for the 2006 – 2008 Upper Little Wabash River basin herpetological surveys. Geographic coordinates are for the approximate center of the site, in decimal degrees, and in Map Datum NAD 83.

SITE	LOCATION
50.	6.2 mi N Neoga, 0.2 mi S CR 1350N bridge, E side of Little Wabash River, Coles Co., IL. T11N, R7E, sec. 8; 39.40801 N, -88.43850 W.
51.	2.0 mi SSW Sigel, Green River Rest Area, adjacent to East Branch Green Creek, Effingham Co., IL. T9N, R6E, sec. 26; 39.19744 N, -88.50294 W.
52.	4.5 mi NW Louisville at CR 1525N (Iola Rd) bridge, W side of Little Wabash River, Clay Co., IL. T5N, R6E, sec. 32; 38.82928 N, -88.54807 W.
53.	3.5 mi ESE Iola, adjacent to Dismal Creek, on N side of Riffle Rd bridge, Clay Co., IL. T4N, R6E, sec. 6; 38.82331 N, -88.56410 W.
54.	5.5 mi SSW Iola, immediately SE of Kinlou Rd and ICC tracks, Clay Co., IL. T4N, R5E, sec. 30; 38.76712 N, -88.68194 W
55.	Flag Pond, 2.9 mi NE Clay City, Clay Co., IL. T3N, R8E, sec. 4/9; 38.71749 N, -88.31579 W.
56.	2 mi ENE Clay City, Clay Co., IL. T3N, R8E, sec. 16; 38.70065 N, -88.32051 W.
57.	4.8 mi SE of Clay City, NE Wilcox Bridge, Richland Co., IL. T2N, R8E, sec. 2; 38.63932 N, -88.29130 W.